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our earlier botanists have not been properly comprehended in the light of our fuller knowledge. The examination has proved that many of our catalogued species are fictitious, and that considerable changes in nomenclature must be made. However such radical changes are to be regretted, they are nevertheless unavoidable if priority of publication is to be considered ; and there is the surety that in the future the changes must be very few. The very oldest types have been seen so far as they are known to exist, and almost every name which has been applied to North American species is accounted for and understood. It is, therefore, evident that any further changes in the names of our species must be almost entirely such as rest upon judgments of the systematic merits of accepted species and varieties."

Professor Bailey visited or had access to twenty-six important collections of carexes, twenty-one of which are in European herbaria. In his paper he upholds the use of the oldest published name or combination in every instance. He has given varietal names "only to those forms which assume a considerable degree of permanence under various conditions, and the combining of which would lead to confusion in the knowledge of the species." He has no sympathy "with that ultra refinement of classification which gives names to specimens rather than to species and their larger variations. Such refinements serve no useful purpose, and do not merit the name of science.

Eighty-four species are critically noticed in the paper, and the synonymy carefully determined. The notes under each species are of the greatest value to the student of this difficult genus, and will have to be carefully studied by every one who wishes to know what are the latest views as to the relationship of the many puzzling species.—CHARLES E. BESSEY.

ZOÖLOGY.

The Zoological Position of Palawan.—Mr. A. H. Everett, in a paper before the Zoölogical Society of London, contends that Palawan and the other islands intervening between Borneo and Mindoro form an integral part of the Bornean group, and do not belong to the Philippine group with which they are usually associated. His grounds are that they are connected with Borneo by a shallow submerged bank, and are separated from the Philippines by water over 500 feet in depth; the fauna also shows a marked preponderance of

Bornean over Philippine forms, and farther, that those which must be regarded as belonging to the latter group are more extensively modified than are those from Bornean sources.

Bahaman Sea Anemones.—In a beautifully illustrated paper (*Jour. Morphol.* III.), Dr. J. P. McMurrich describes the sea anemones of the Bahamas, using as a basis material which he collected while a student at the Johns Hopkins summer laboratory. Fourteen species in all were found, of which *Bunodes tæniatus* and *Auloctinia stelloides* are regarded as new. The descriptions of the species contain many comments upon the synonymy and numerous details of structure impossible to present in abstract. Dr. McMurrich, from a study of these forms, concludes that the Bahaman Actinarian fauna is much more closely allied to that of the Indo-Pacific than it is to that of the rest of the Atlantic, the similarity of many species to those of the Red Sea being remarkable. The occurrence of *Lebrunnea neglecta* in shallow water in the Bahamas is interesting, since the other members of the sub-tribe to which it belongs occur in the deep seas off the coast of Chili. Dr. McMurrich explains this by supposing (with Semper) that uniformity of temperature is of more importance than the absolute degree of heat and cold.

The Siphonophores.—Prof. Ernest Haeckel finds (*Jena. Zeitsch.* 1888, and Vol. XXVIII. of the Zoölogy of the Challenger Expedition) that the Siphonophores embrace two very distinct groups, which agree only in being hydroid colonies, the individuals of which must be regarded as Craspedote medusæ modified for special functious. These two groups are called Siphonanthæ and Disconanthæ. In the first are included the great majority of the species, the Disconanthæ including only Porpita telella, etc. In the Siphonanthæ the colony is to be regarded as a Craspedote medusa, from the proboscis of which have budded numerous other medusæ which have become specialised for their different functions. In the Disconanthæ we have a Craspedote medusa, with its central proboscis and its marginal tentacles. Instead, however, of secondary individuals budding from the proboscis, these arise from secondary probosces which bud later from the under side of the disc. This view, it will be seen, is intermediate between the two theories of the morphology of the Siphonophores. According to the first, each Siphonophore is to be regarded as a single medusa, the various organs—swimming bells, gonads, tentacles, etc.—being dislocated parts of this medusa duplicated by budding. The other view is that the Siphonophore is a medusoid colony, each of the appendages to be regarded as an (often modified) hydroid or medusa.

The Mesenteries in the Antipatharia.—At a recent meeting of the Royal Society of Edinburgh, Mr. George Brook described the structure of the radial septa or mesenteries in the Antipatheria. The usual directive pair of septa were found, but besides these traces of bilaterality were not seen, and their positions were not explicable on the usually received explanations, but on applying the law developed by Lacaze-Duthiers for the Hexactiniæ to the septa of the antipatharian polyps, and regarding the order of the formation in the one as comparable to their length in the other, order was at once introduced.

The Eyes of Limulus.—Mr. S. Watase has made a careful study of the structure and development of the lateral and central eyes of Limulus, a preliminary account of which appears in the Johns Hopkins *Circulars*, No. 70. The compound lateral eyes have a faceted cornea, each facet corresponding to a conical lens projecting from the inner surface. Surrounding each lens is an ommatidial pit consisting of a single layer of ectodermal cells. In the centre is an axial process of a gigantic ganglion cell, while around it are arranged the pigmented ommatidial cells, each of which secretes on its inner (central) surface a finely striated "rod." Each of these retinular cells is in connection with nerve fibres, while around it are elongate pigment cells developed from the ectoderm. Mr. Watase does not find the intrusive mesodermal pigment described by Messrs. Lancaster and Bowne. In connection with the development of the eyes there is a formation of a V-shaped groove, which later flattens out, forming a partial optic invagination. The optic nerves arise as fibres from the ectoderm cells of the outer wall of the groove. The median eyes are also described, but without diagrams it is not easy to follow the account either of structure or development. Apparently the dorsal ectoderm gives rise to the "vitreous body" or corneal hypodermis, while the retina is produced by an invagination of ectoderm from the central surface, which grows forward and upward to connect with the other elements. Mr. Watase does not attempt to account for this strange condition.

Note on the Feeding Habits of Cermatia forceps Raf.—From an observant public school teacher, Miss Kate Rondeau, of Golconda, Illinois, I have received an item of information concerning the feeding habits of *Cermatia forceps*, new to me and to the literature of the species, so far as I am acquainted with it.

This myriapod was quite abundant during one summer in Miss Rondeau's residence (upon one of the islands of the Ohio River), especially in the kitchen and dining room. It seemed to be strictly nocturnal in its habits, coming out, however, freely by night in the lighted rooms. "I have seen a dozen or more," she says, "at one time, remaining motionless for perhaps half an hour, when suddenly one, with a quick movement of one of its many legs, would catch an unwary house-fly that approached too near. Sometimes this would be eaten immediately, but sometimes held in the foot until two or three more flies were caught. I have seen the Cermatia thus eating one fly while holding two or three others.

"Only the soft part of the body of the fly is eaten, the legs, wings, and head dropping to the floor. In the morning the table and floor were always specked with these remains, showing that the Cermatia was a very successful fly-catcher."

I identified the form to which these remarks apply, by her minute description and by her subsequent recognition of a figure.—S. A. FORBES.

The Scottish Fishing Board.—Among the various papers in the report of this board, which in its functions corresponds with our Commission of Fish and Fisheries, we notice that it is advised, in order to restore the lobster fishery to its former condition, that the limit of size of lobsters permitted to be sold be raised from 8 to 9 inches in length, and it is also proposed to attempt artificial hatching of lobsters. The paper is by Prof. Ewart and Mr. T. W. Fulton. Mr. Thomas Scott catalogues 230 species of Crustacea as occurring in the Firth of Forth. Red codfish has been causing trouble in Scotland. Here it was believed by Dr. Farlow to be caused by *Clathrocystis rosea-persina*, but, Dr. Edington, of the Scottish Board, ascribes it to *Bacillus rubescens*, also introduced with the salt.

Coluber obsoletus Say.—A fine specimen of *Coluber obsoletus* Say was obtained on Snake Hill, near Newburgh, Orange county, New York, during the summer of 1888.—JOHN I. NORTHROP.

Hesperiphona vespertuca.—About noon, December 12, 1889, I procured a specimen of this rare bird. It was feeding on the seeds of a maple in front of the University buildings. The specimen is a male, and in fine plumage. It was apparently alone, as no others have been seen as yet. The only authority I find for its identification in Ohio is Ohio Geological Report, Vol. IV., by J. M. Wheaton, p. 314, where he reports it was identified by Dr. Kirkland, March 24, 1860. The bird differs in a few details from most of the descriptions. A complete description will be given in next issue of Bulletin of Scientific Laboratories. Dr. Wheaton states that the song of the evening grosbeak is a miserable failure. In Vol. I. of the Bulletin will be found a note on the song, and the complete osteology of the species, by Prof. C. L. Herrick, with plates.—W. G. TIGHT, *Denison University, Granville, O.*

Note on the Seventh Cervical Vertebra of the Cat.—While preparing a skeleton of a young cat, I was interested to note that the diapophyses of the seventh cervical vertebra were perforated for the passage of the vertebral artery and vein. Flower (Osteology of the Mammalia, p. 38) states that "the transverse process" (of the Carnivora) "has no inferior lamella, and its base is imperforate." Wilder, however (Anatomical Technology, p. 172), says that in the cat the last cervical vertebra is rarely perforated.—JOHN I. NORTHROP.

Zoological News.—**Protozoa.**—J. Künstler (*Comptes Renders*, 1888) has found a protozoan parasite resembling *Lophomonas blattarum* in the posterior part of the intestine of Limulus. In the same place he describes other entozoic protozoa from various hexapods.

Dr. Plate's observations on the luminosity of Noctiluca (*Ann. and Mag. Nat. Hist.*, 1889) are interesting. When specimens were placed on moist blotting-paper, and examined under a high power, he found that the character of the light varied. At times it consisted of sharp flashes followed by total darkness, or by a faint light for a minute or two. Again, the surface might be faintly luminous while at the same time small points sparkled brightly, or, lastly, the whole surface was luminous on account of such sparkling points. The light is produced by the outer layer of plasma, and is stimulated by irritation. Pure oxygen passed over the specimens produced a dull light visible for several minutes. In nitrogen no light is produced.

The most noticeable of Gruber's new species of Protozoa (*Bericht Naturfor. Gesellschaft Freiburg*, 1888) is a new Protomyxa, which differs from Haeckel's oft-quoted species, *P. aurantiaca*, in being colorless. Staining with picrocarmine brought out the fact that nuclear substance (chromatin) was actually present as small granules scattered through the protoplasm. The bearings of this upon the validity of the Monera is at once evident.

Crustacea.—Rev. A. M. Norman presents some notes on British Amphipods in the *Annals and Magazine of Natural History* for June. A new genus, *Megaluropus*, is described, and the synonymy of several species of *Œdiceridæ* is straightened out. In August he continues with notes on Leucothoidæ, Pardaliscidæ, and Gammaridæ. The American *Gammarus ornatus* is shown to be the same as *G. locusta*, while there are notes on three other species which range to American seas.

Arthropoda.—Mr. Arthur Dendy reports (*Nature*, Feb. 14, 1889) the discovery of a new species of Peripatus in Victoria, Australia.

Albert D. Michael describes (*Jour. Roy. Micros. Soc.*, Feb., 1889) the anatomy of the mite *Uropoda krameri.* The paper is not one admitting of abstract. The general features of the species are Gamasid, but as in its shape it approaches the Bropodidæ, so it does in its structure.

Hexapoda.—According to the *Jour. Roy. Micros. Soc.* for December, Dr. D. Casagrande claims that in the silk-worm (in which he traced the metamorphosis of the alimentary canal from the larval to the adult stage) "the epithelium of the œsophagus and of the hind gut of the perfect insect is derived from the mid gut; in such a case the œsophageal and hind gut epithelium in the adult insect cannot be regarded as ectodermic in origin, as they are in the larva, but must be entodermic, arising as they do from the mid gut." The writer has recently shown (AM. NAT., XXII., p. 471, 1888, and more fully in a paper soon to be issued) that in Crangon the alimentary tract proper is wholly of ectodermal origin. Now no one has yet published any complete account of the development of the digestive tract in the Hexapods, but there is much reason for suspecting that in this group a similar condition of affairs exists. The observations of Dr. Casagrande are strongly confirmatory of this view, which,if it be true, relieves us from the necessity of replacing organs derived from one germ layer by cells derived from another.—J. S. KINGSLEY.

Vertebrata.—T. H. Morgan concludes (*J. H. U. Circ.*, No. 70) that in *Amblystoma punctatum* part of the blastopore is converted into the neurentric canal, and part persists as the anus, while in *Rana halecina* the blastopore completely closes.

The South American bat (*Noctilio leporinus*) is stated to eat fish. Specimens have recently been studied in which fish-scales were found in the stomach.

Mr. P. L. Sclater sends to *Nature*, No. 1012, the substance of a suggestion made by Mr. W. Rodier, of New South Wales, for the extermination of rabbits, which has at least the elements of plausibility. It is to catch as many of the rabbits as possible by means of traps, ferrets, etc., and to destroy only the does taken, setting the males free. "The results of this mode of operation are that the male rabbits, as soon as they begin to predominate in numbers, persecute the females with their attentions, and prevent them from breeding. They also kill the young rabbits that happen to be born, and where they largely predominate in numbers, worry the remaining does to death." Mr. Rodier states that on his station an eight months' trial has resulted in clearing the country of the pests.

Fishes.—Jenkins and Evermann describe (Proc. U. S. Nat. Mus., 1888) eighteen new species of fishes from Guaymas, on the Gulf of California. Hermosilla is a new genus of the family Sparidæ, and Pseuddoblennius of the family Blenniidæ. Clevelandia is reduced to synonymy as was done some time ago in this Journal.

Dr. R. W. Shufeldt (*Jour. Morphology*, II., pt. 2) has given some details of the osteology of an unique specimen of the fish *Grammicolepis brachiusculus* Poey. The account is too detailed for abstract, but with Professor Poey, Dr. Shufeldt thinks the relationships of the Grammolepidæ tend mostly in the direction of the Casangidæ.

Birds.—Mr. F. E. Beddard concludes (*Proc. Zoöl. Soc.*, London), from a study of the muscular system of Polyboroidei, that this genus is not even an aberrant type of Falconidæ, and does not deserve even sub-family rank.

EMBRYOLOGY.

A Physiological Hypothesis of Heredity and Variation.

—The extravagant claims made by Prof. Weismann, the author of the doctrine of the *isolation of the germ-plasma*, and of the doctrine of *heredity* based upon it, as well as the strenuousness with which it is insisted that there is no other way in which the facts of inheritance may be coördinated, requires that a re-examination be made of the grounds upon which those claims are supposed to rest. This is all the more necessary, in that this author and his followers repudiate the evidence upon which the claim is made that acquired characters, taken in the widest Lamarckian sense, can be transmitted. During a period extending over fifteen years the present writer has devoted himself to a study of the genesis of adaptations, and with the lapse of time the conviction has grown only the clearer that these authors are laboring